

Appendix B

Meteorological Data

This section contains meteorological data derived from various regulatory and non-regulatory sites. The data provides a comparative analysis of winds speed, wind direction, wind gusts and concentration data. Please note that meteorological instruments measure at different heights, and at different time intervals. By taking, the actual time of measurement and assuring that all data represented is in Pacific Standard Time (PST) there is uniformity of the data. In addition, not all stations measure at the exact same time, i.e. measurements at 053 and 056 therefore, comparisons are measurements within a 60-minute period. While there may be some overlapping and slight differences the comparative analysis provides the reader with a better understanding of the regional effect of the Exceptional Event.

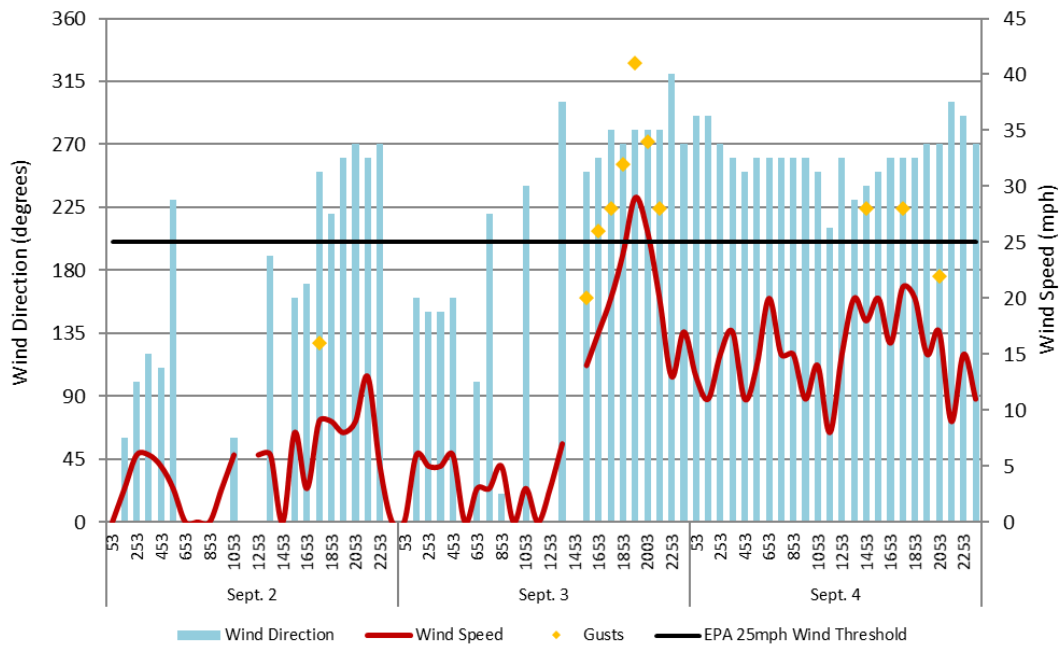
FIGURE B-1
METEOROLOGICAL AND AIR QUALITY SITES REFERENCED IN THIS DOCUMENT



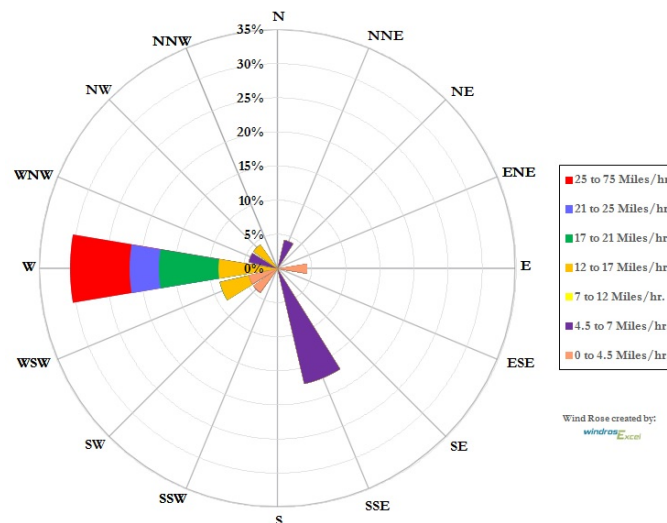
Fig. B-1: A collection of meteorological and air quality sites referenced in this document. Base map from Google Earth.

**IMPERIAL COUNTY SITES
FIGURES B-2 THROUGH B-9**

**FIGURE B-2
IMPERIAL COUNTRY AIRPORT (KIPL)
WIND SPEED (AVERAGES), GUSTS & DIRECTION**



**FIGURE B-3
IMPERIAL COUNTRY AIRPORT (KIPL) WIND ROSE – SEPTEMBER 3, 2016**



Figs. B-2 & B-3: Imperial Airport meteorological data for September 3, 2016 shows that west winds were over 25 mph. Wind data from the NCEI's QCLCD system.

FIGURE B-4
EL CENTRO NAF (KNJK)
WIND SPEED (AVERAGES), GUSTS & DIRECTION

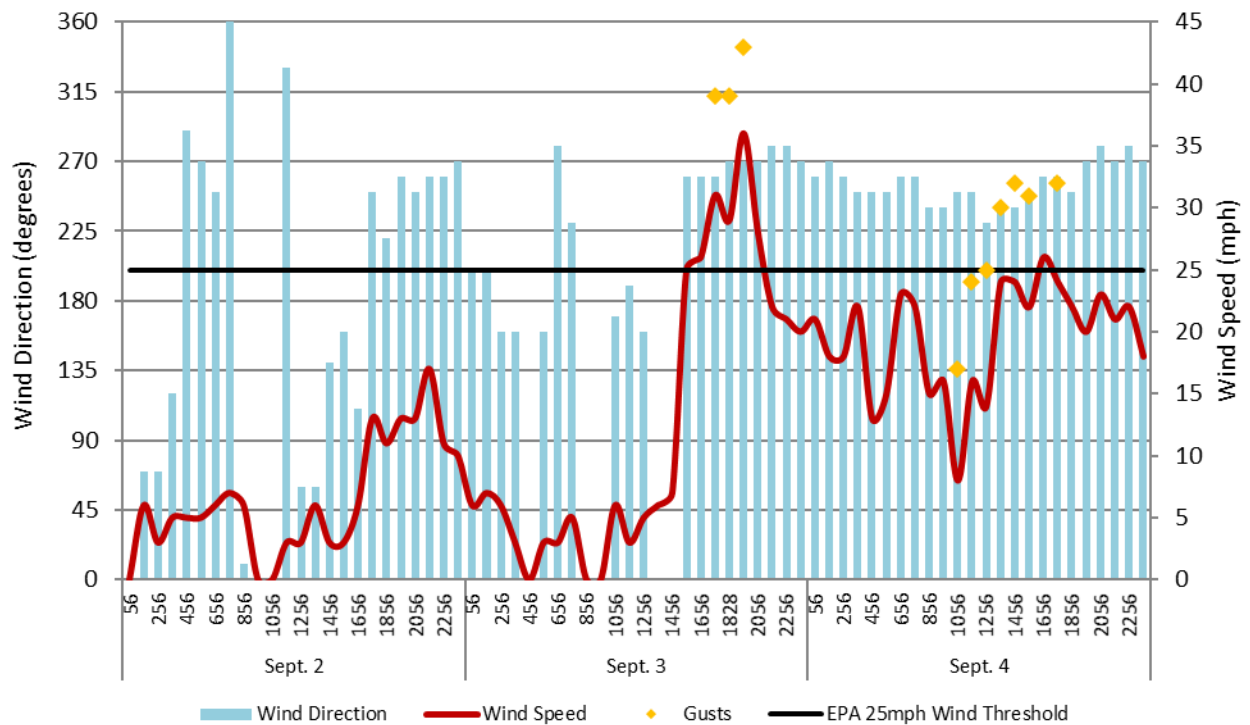
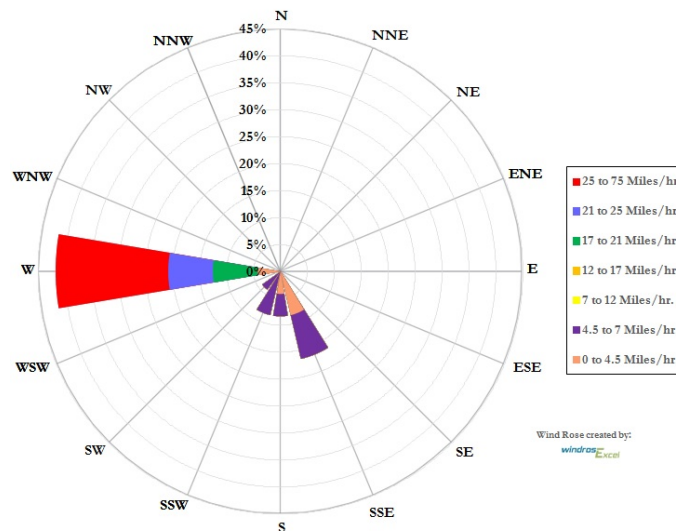
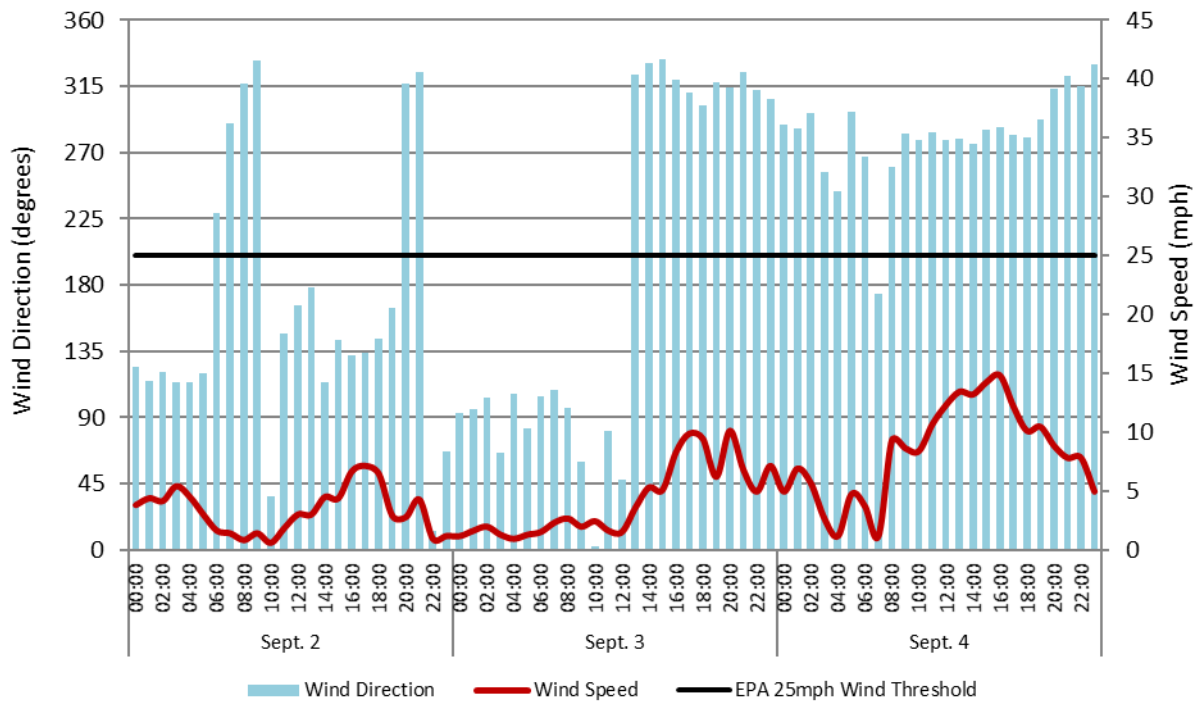


FIGURE B-5
EL CENTRO NAF (KNJK) WIND ROSE – SEPTEMBER 3, 2016

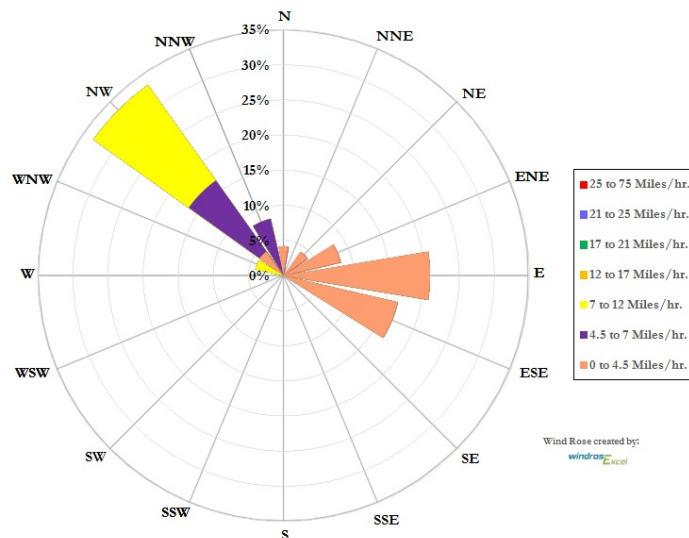


Figs. B-4 & B-5: El Centro NAF meteorological data for September 3, 2016 shows that west winds were over 25 mph. Wind data from the NCEI's QCLCD system.

**FIGURE B-6
CALEXICO
WIND SPEED & DIRECTION**

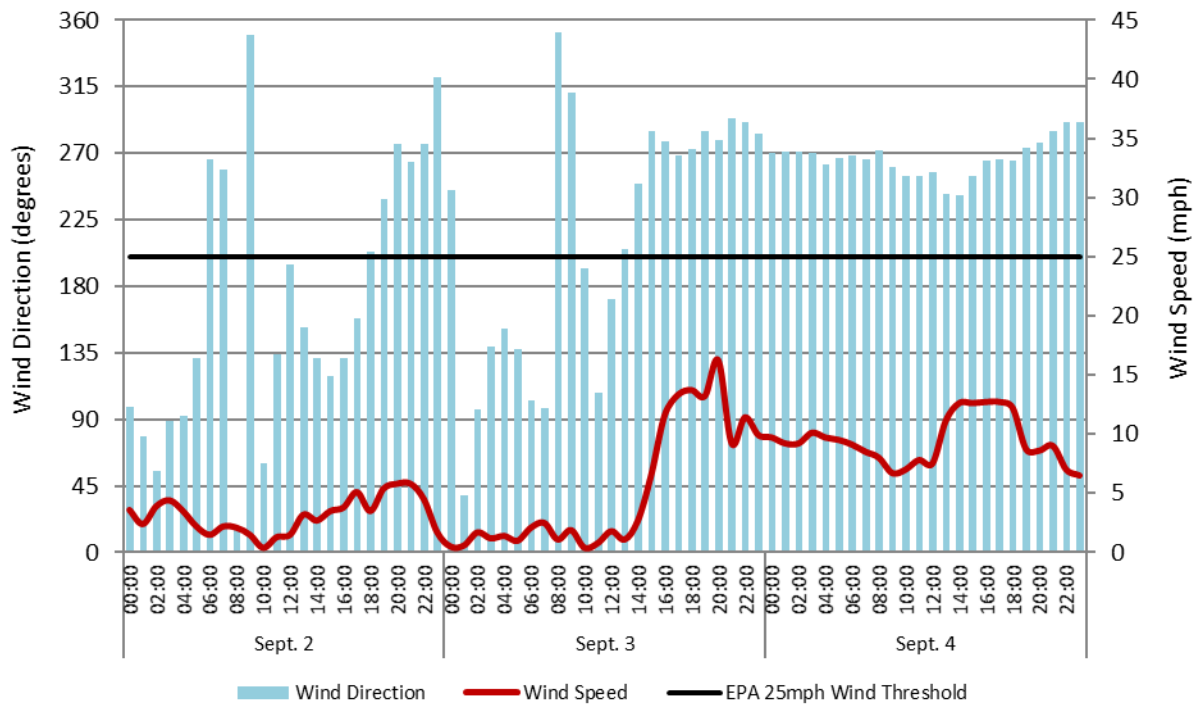


**FIGURE B-7
CALEXICO WINDROSE – SEPTEMBER 3, 2016**

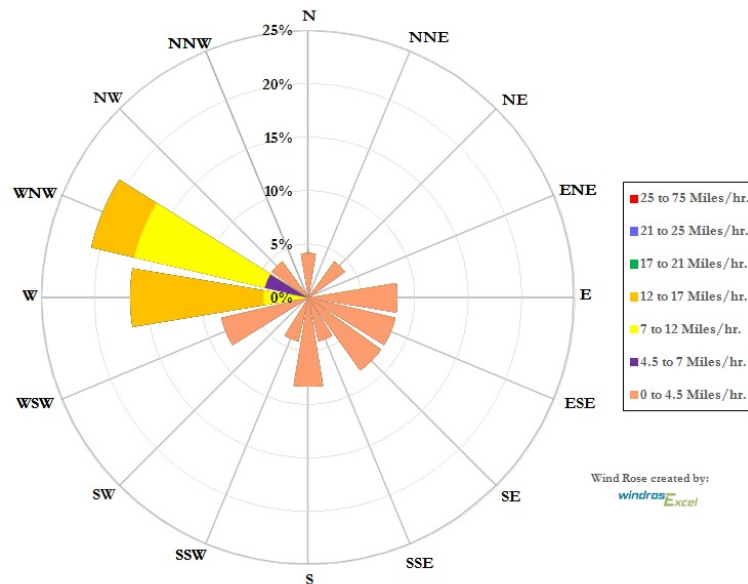


Figs. B-6 & B-7: Calexico meteorological data for September 3, 2016 shows that the station received predominantly northwest under 25 mph. Wind data from the NCEI's QCLCD system.

FIGURE B-8
EL CENTRO (9TH St)
WIND SPEED & DIRECTION



FIGURES B-9
EL CENTRO (9TH ST) WIND ROSE – SEPTEMBER 3, 2016



Figs. B-8 & B-9: El Centro station meteorological data for September 3, 2016 shows a distinct W-WNW direction. Wind data from the EPA's AQS data bank.

FIGURE B-10
NILAND (ENGLISH RD)
WIND SPEED & DIRECTION

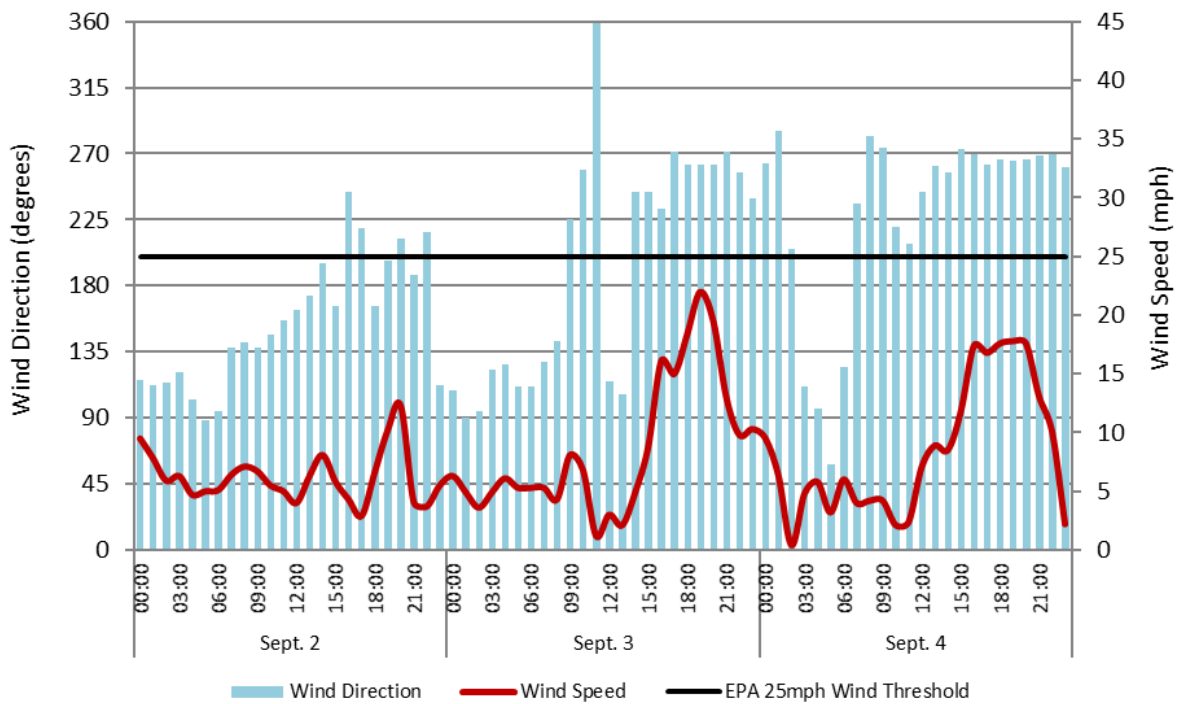
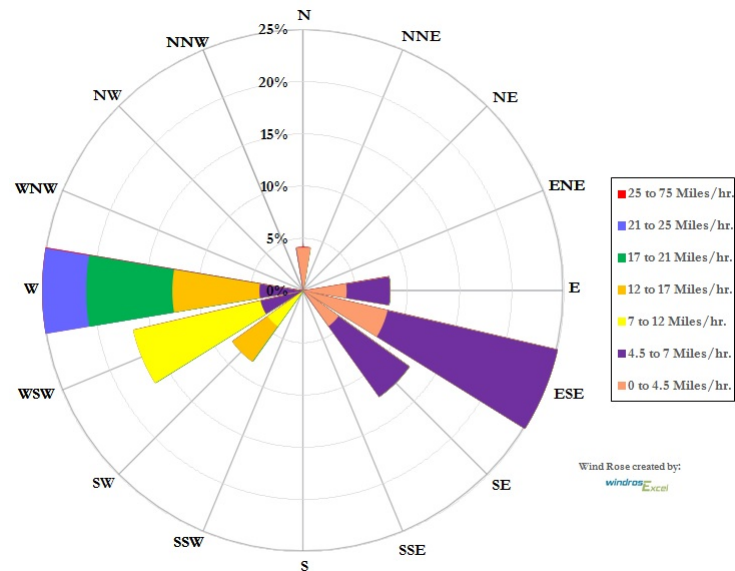
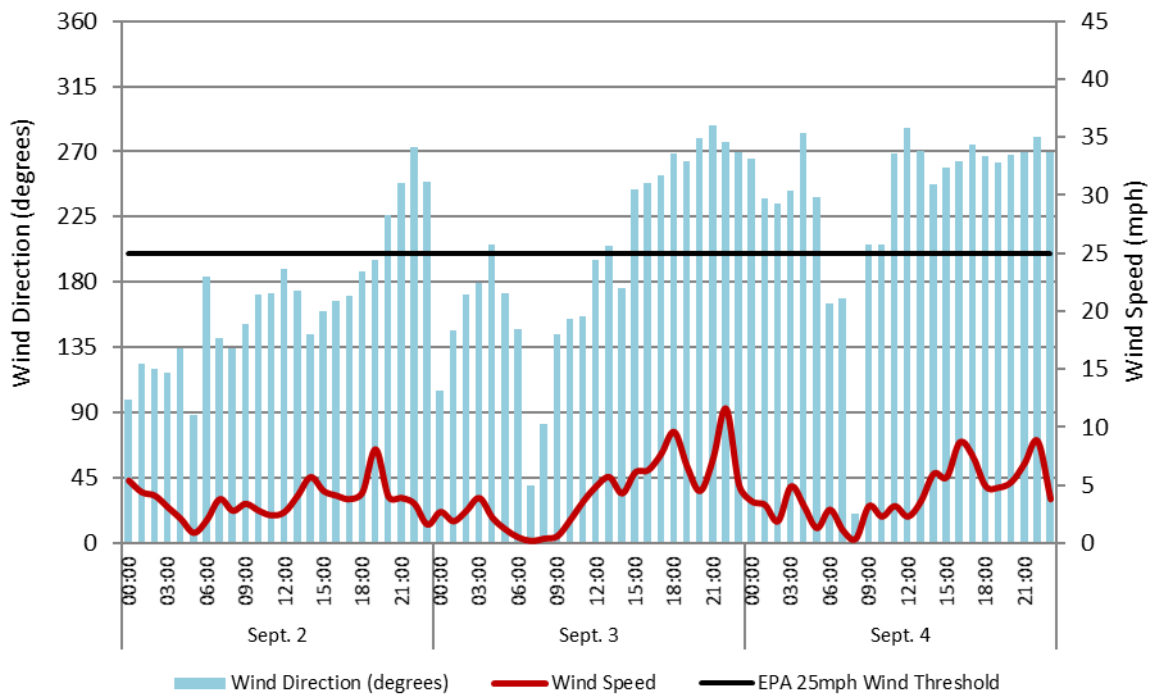


FIGURE B-11
NILAND (ENGLISH RD) WINDROSE – SEPTEMBER 3, 2016

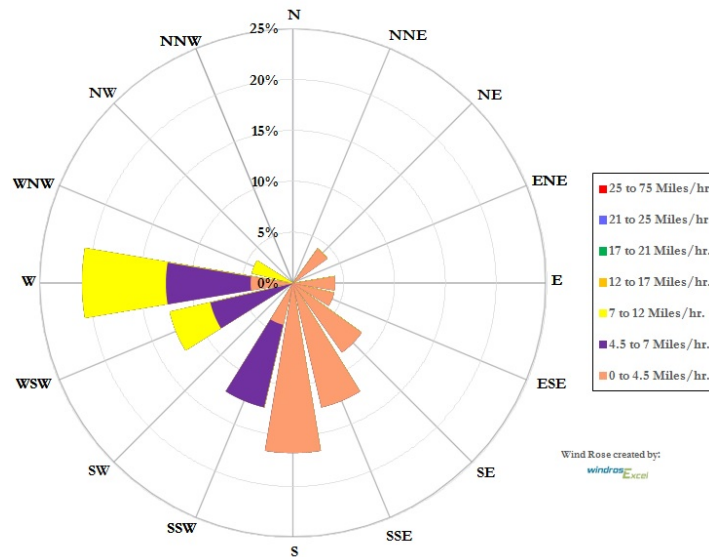


Figs. B-10 & B-11: Niland wind data for September 3, 2016 shows a distinct west direction for the highest winds. Wind data from the EPA's AQS data bank.

**FIGURE B-12
WESTMORLAND
WIND SPEED & DIRECTION**



**FIGURE B-13
WESTMORLAND WINDROSE – SEPTEMBER 3, 2016**



Figs. B-12 & B-13: Westmorland station meteorological data for September 3, 2016 shows a distinct west direction for the higher winds. Wind data from the EPA's AQS data bank.

EASTERN RIVERSIDE COUNTY SITES

FIGURE B-14
BLYTHE AIRPORT (KBLH)
WIND SPEED (AVERAGES), GUSTS & DIRECTION

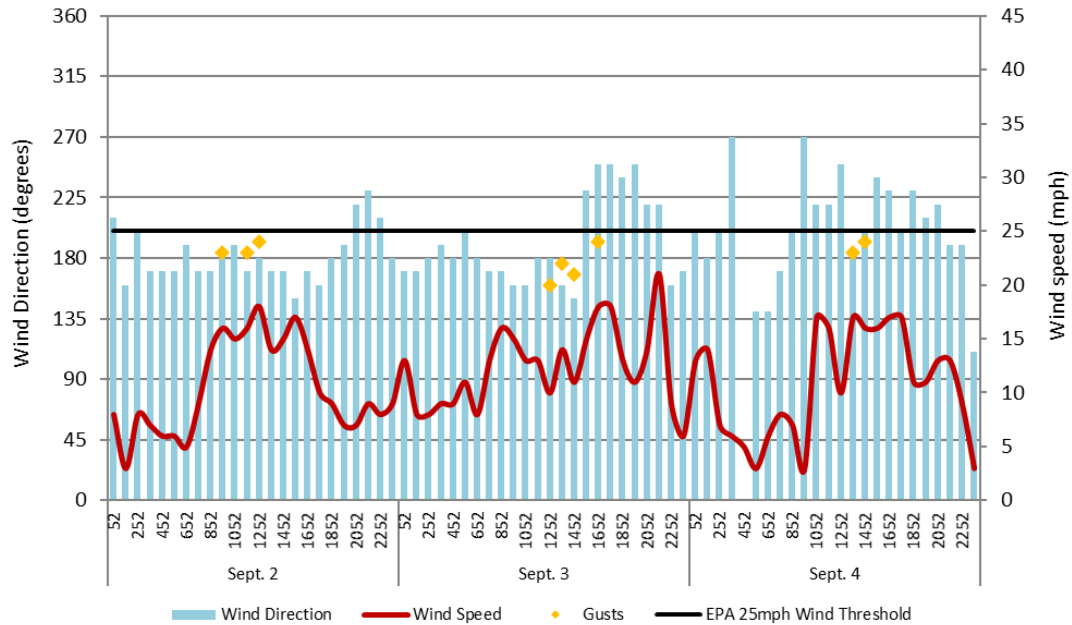


Fig. B-14: Wind data from the NCEI's QCLCD system.

FIGURE B-15
JACQUELINE COCHRAN REGIONAL AIRPORT (KTRM)
WIND SPEED (AVERAGES), GUSTS & DIRECTION

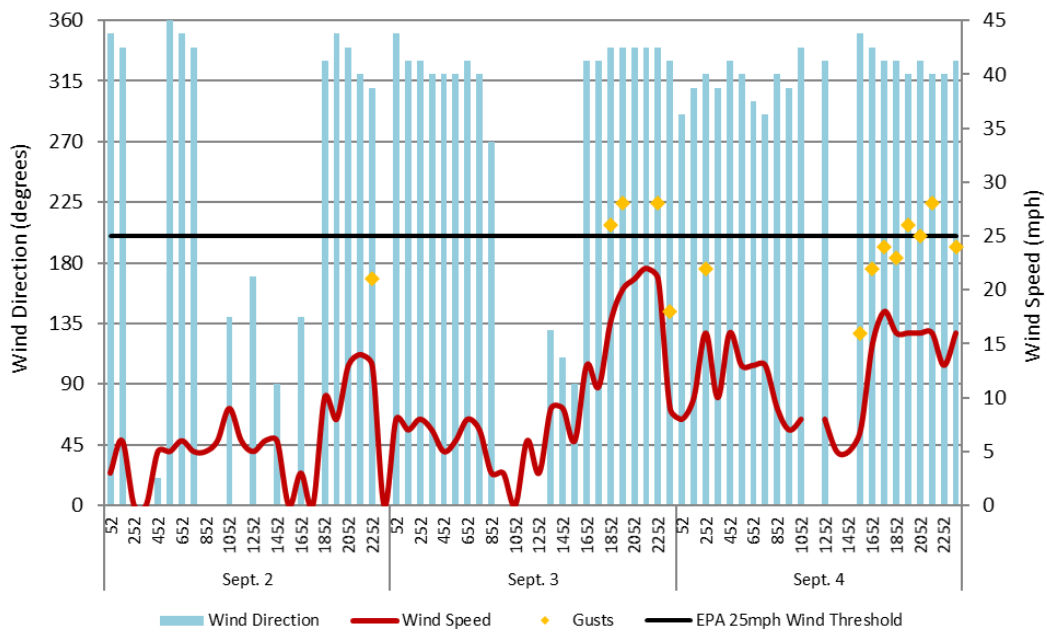


Fig. B-15: Wind data from the NCEI's QCLCD system.

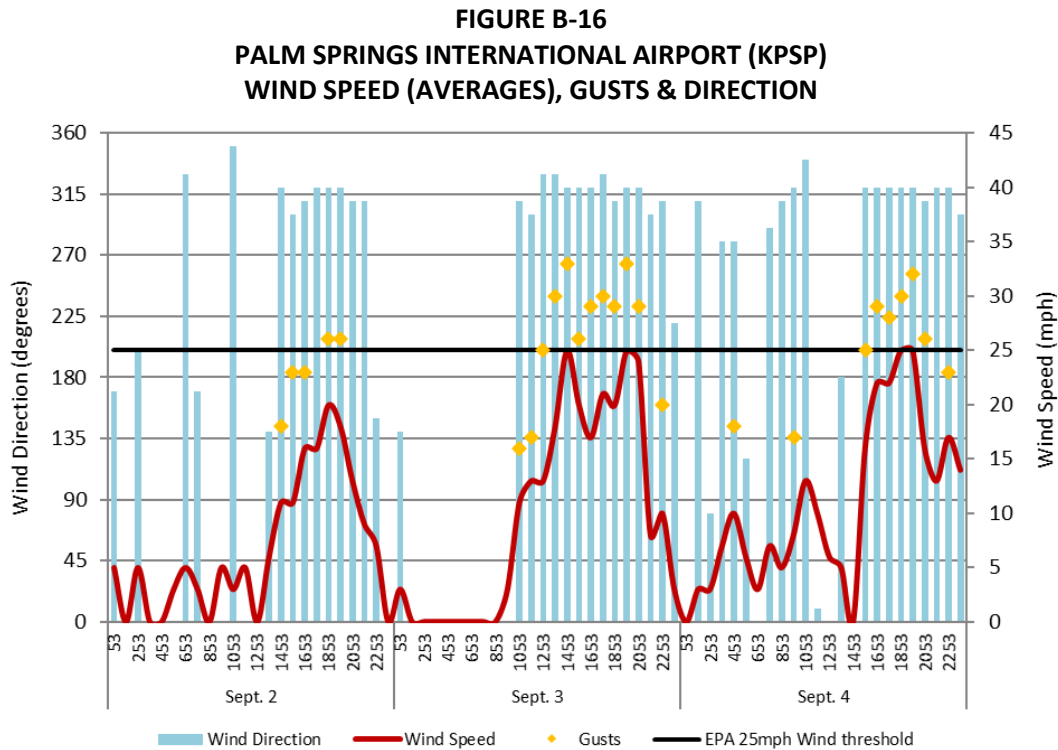


Fig. B-16: Wind data from the NCEI's QCLCD system.

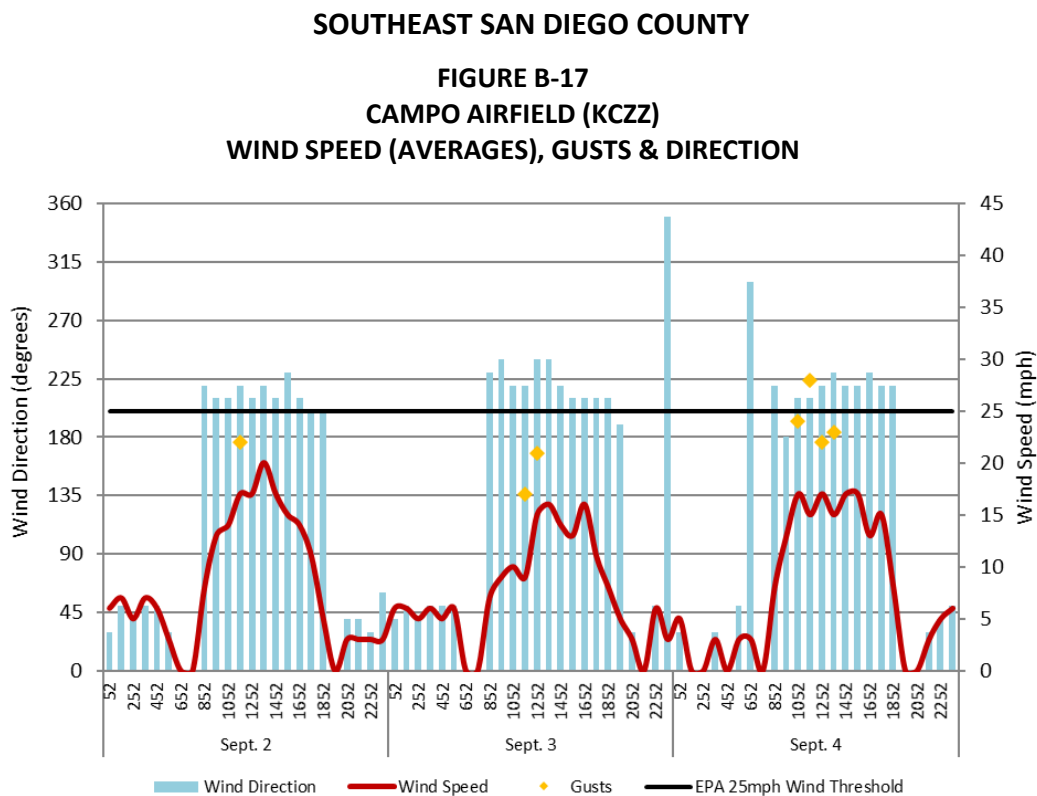
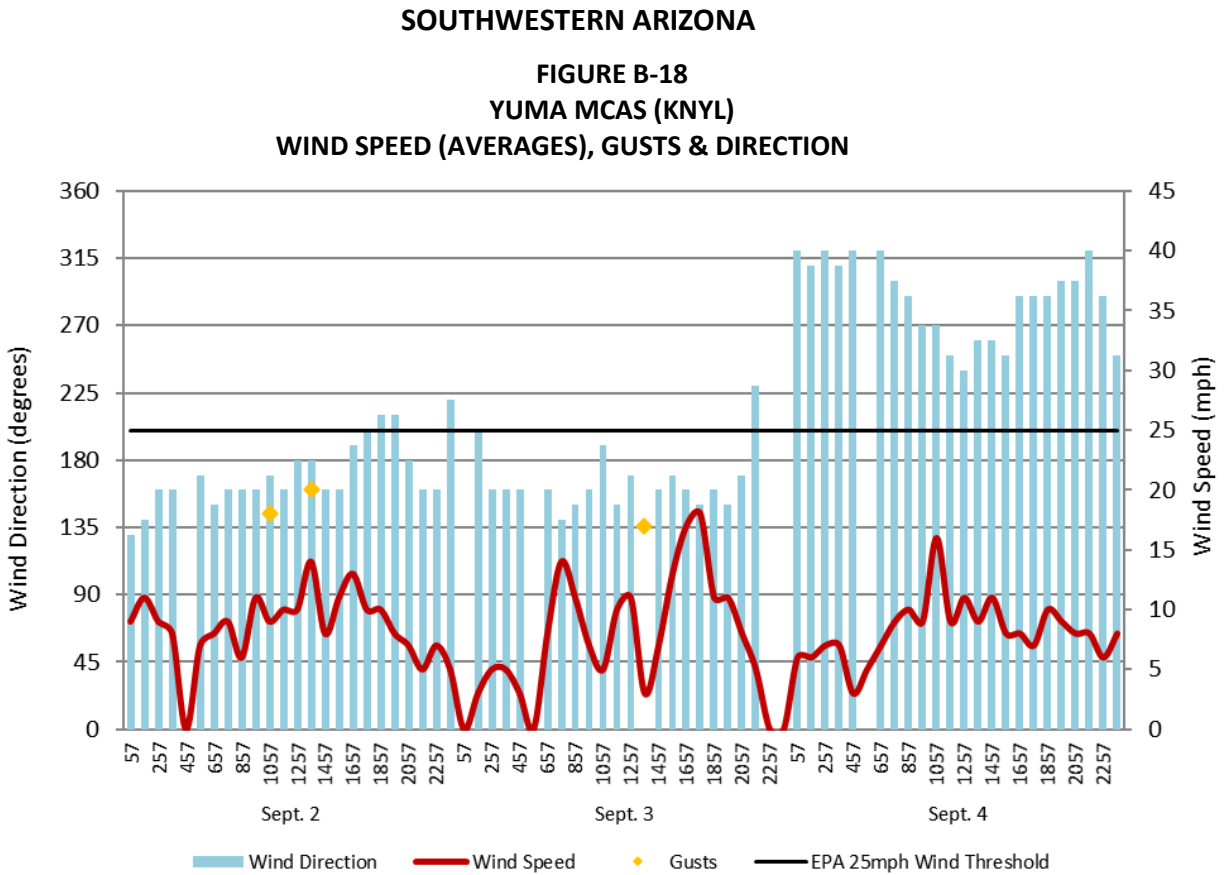


Fig. B-17: Wind data from the NCEI's QCLCD system.



Figs. B-18: Yuma MCAS (KNYL), downstream from Imperial County, did not have winds of 25 mph. Data from the NCEI QCLCD system.

UPSTREAM WIND SITES

The following sites were upstream from Imperial County during the September 3, 2016 wind event.

FIGURE B-19
MOUNTAIN SPRINGS GRADE
WIND SPEED (AVERAGES), GUSTS & DIRECTION

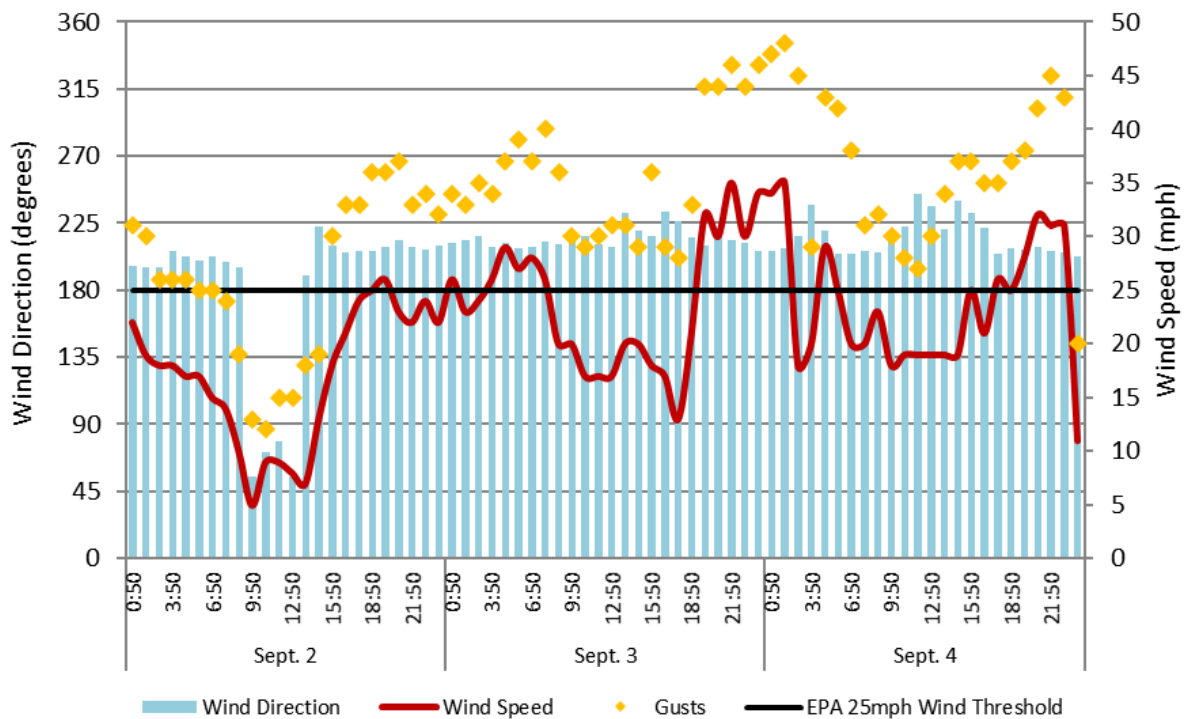
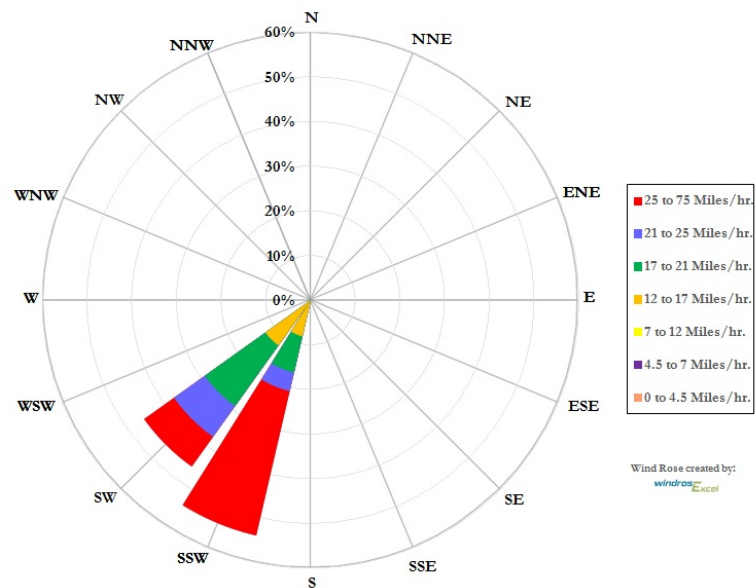


FIGURE B-20
MOUNTAIN SPRINGS GRADE WIND ROSE – SEPTEMBER 3, 2016



Figs. B-19 & B-20: Mountain Springs Grade (TNSC1) on the desert slopes (elev. 2,044 ft) upstream from the Imperial County monitoring stations had both winds and gusts of over 25 mph. Data from the University of Utah's MesoWest.

FIGURE B-21
SUNRISE-OCOTILLO
WIND SPEED (AVERAGES), GUSTS & DIRECTION

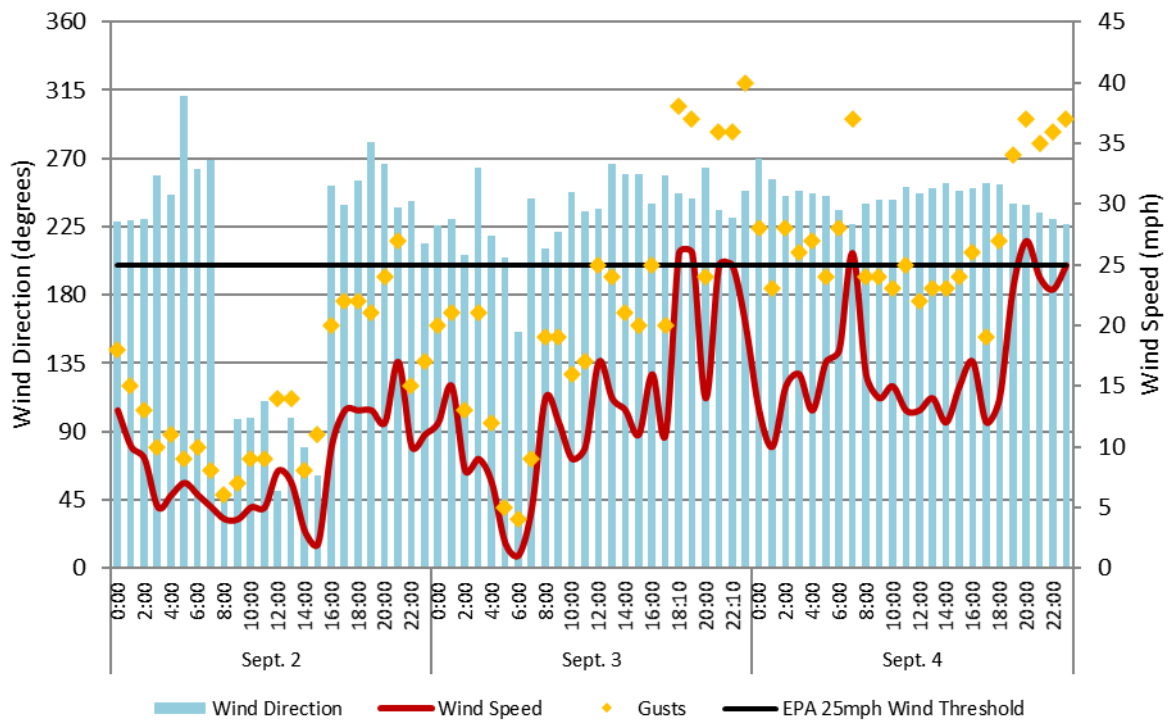
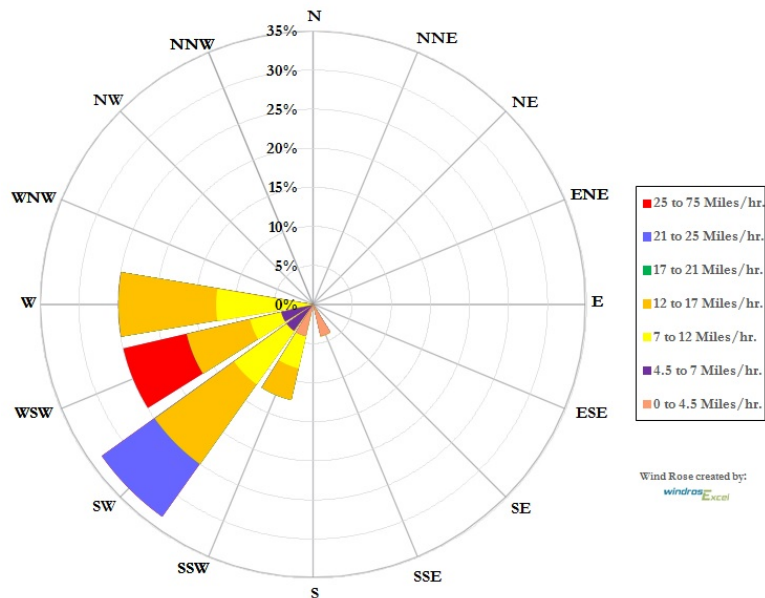


FIGURE B-22
SUNRISE-OCOTILLO WIND ROSE – SEPTEMBER 3, 2016



Figs. B-21 & B-22: Sunrise-Ocotillo (IMPSD) near the desert floor (elev. 695 ft.) had both winds and gusts of over 25 mph. Data from the University of Utah's MesoWest.

FIGURE B-23
FISH CREEK MOUNTAINS
WIND SPEED (AVERAGES), GUSTS & DIRECTION

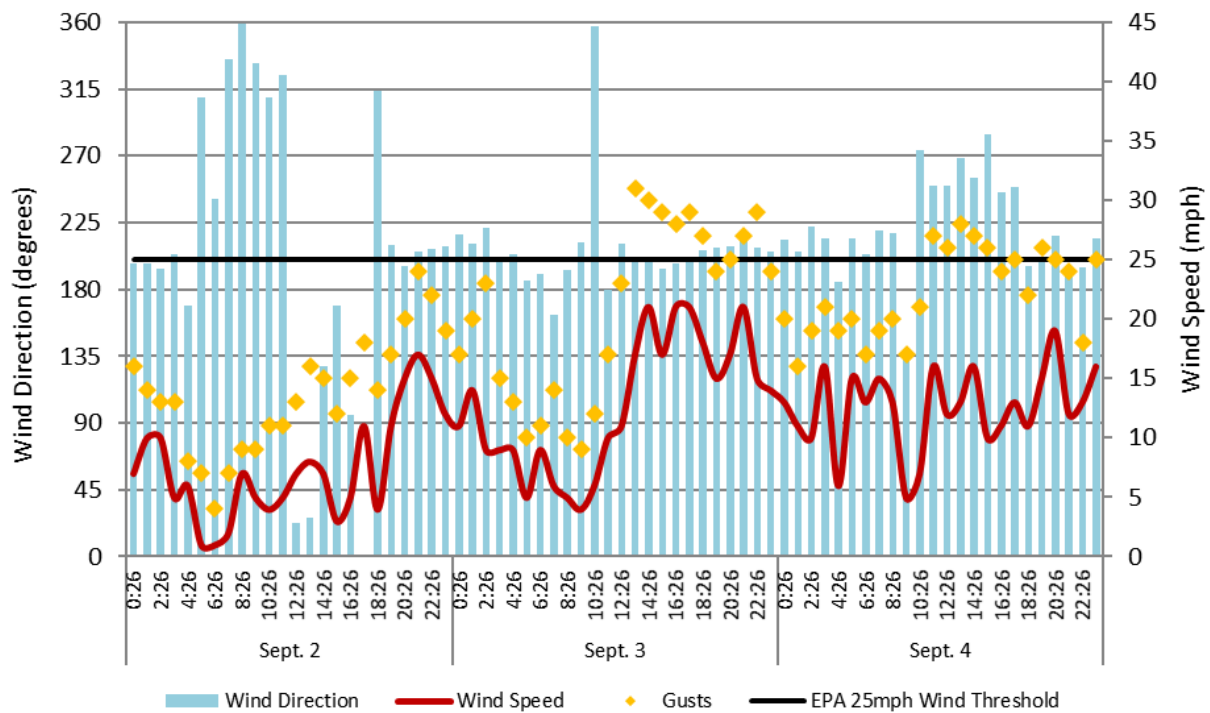
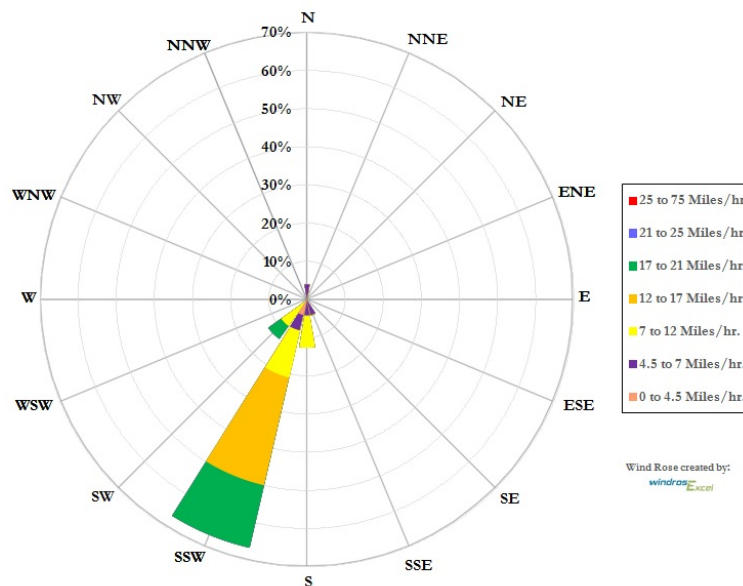


FIGURE B-24
FISH CREEK MOUNTAINS WIND ROSE – SEPTEMBER 3, 2016



Figs. B-23 & B-24: The Fish Creek Mountains (FHCC1) near the desert floor (elev. 781 ft.) had gusts of over 25 mph. Data from the University of Utah's MesoWest.

FIGURE B-25 IMPERIAL COUNTY AIRPORT (KIPL) QCLCD – SEPTEMBER 3, 2016

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA (final)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

HOURLY OBSERVATIONS TABLE IMPERIAL COUNTY AIRPORT (03144) IMPERIAL, CA (09/2016)

Elevation: -58 ft. below sea level
Latitude: 32.834
Longitude: -115.578
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (n. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (n. hg)	Report Type	Precip. Total (in)	Alti-meter (n. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
03	0053	12	CLR	10.00		83	28.3	60	15.3	40	4.4	22	0	000		29.73		29.67	AA		29.67	
03	0153	12	CLR	10.00		82	27.8	59	14.9	39	3.9	22	6	160		29.72		29.67	AA		29.66	
03	0253	12	CLR	10.00		83	28.3	63	17.0	48	8.9	30	5	150		29.73		29.67	AA		29.67	
03	0353	12	CLR	10.00		84	28.9	71	21.6	64	17.8	51	5	150		29.73		29.67	AA		29.67	
03	0453	12	CLR	10.00		80	26.7	70	20.9	64	17.8	58	6	160		29.74		29.68	AA		29.68	
03	0553	12	CLR	10.00		80	26.7	69	20.6	63	17.2	56	0	000		29.75		29.69	AA		29.69	
03	0653	12	CLR	10.00		85	29.4	73	22.7	67	19.4	55	3	100		29.77		29.71	AA		29.71	
03	0753	12	CLR	10.00		90	32.2	68	20.1	55	12.8	51	3	220		29.78		29.72	AA		29.72	
03	0853	12	CLR	10.00		95	35.0	68	19.7	50	10.0	22	5	020		29.79		29.73	AA		29.73	
03	0953	12	CLR	10.00		96	35.6	67	19.5	48	8.9	19	0	000		29.77		29.71	AA		29.71	
03	1053	12	CLR	10.00		99	37.2	66	18.8	42	5.6	14	3	240		29.75		29.70	AA		29.69	
03	1153	12	CLR	10.00		102	38.9	68	19.7	44	6.7	14	0	000		29.73		29.67	AA		29.67	
03	1253	12	CLR	10.00		103	39.4	69	20.4	47	8.3	15	3	VR		29.70		29.65	AA		29.64	
03	1353	12	CLR	10.00		106	41.1	69	20.5	45	7.2	13	7	300		29.68		29.62	AA		29.62	
03	1453	12	CLR	10.00		105	40.6	69	20.8	47	8.3	14		M		29.65		29.59	AA		29.59	
03	1553	12	CLR	10.00		105	40.6	69	19.0	37	2.8	10	14	250	20	29.64		29.58	AA		29.58	
03	1653	12	CLR	6.00	HZ	101	38.3	65	18.4	38	3.3	11	17	260	26	29.62		29.57	AA		29.56	
03	1753	12	CLR	4.00	HZ	94	34.4	65	18.1	43	6.1	17	20	280	28	29.62		29.56	AA		29.56	
03	1809	12	BKN011	2.50	HZ	92	33.3	64	17.9	44	6.7	19	18	290	30	29.63		M	SP		29.57	
03	1826	12	OVC012	3.00	HZ	91	32.8	65	18.1	46	7.8	21	20	280	28	29.63		M	SP		29.57	
03	1839	12	OVC009	2.50	HZ	90	32.2	64	17.9	46	7.8	22	21	280	30	29.63		M	SP		29.57	
03	1853	12	BKN009	2.50	HZ	89	31.7	64	17.5	45	7.2	22	24	270	32	29.63		29.57	AA		29.57	
03	1903	12	SCT007	2.50	HZ	88	31.1	63	17.3	45	7.2	22	26	280	33	29.63		M	SP		29.57	
03	1934	12	SCT007	4.00	HZ	87	30.6	63	16.8	38	3.3	18	26	290	33	29.65		M	SP		29.59	
03	1950	12	FEW007	2.00	HZ	88	31.0	60	15.6	36	2.0	16	29	280	41	29.65		M	SP		29.59	
03	1953	12	FEW007	2.00	HZ	87	30.6	60	15.2	35	1.7	16	28	280	41	29.66		29.60	AA		29.60	
03	2003	12	FEW007	7.00		87	30.6	59	14.9	33	0.6	14	26	280	34	29.66		M	SP		29.60	
03	2053	12	CLR	10.00		85	29.4	58	14.3	32	0.0	15	21	270	30	29.67		29.61	AA		29.61	
03	2153	12	CLR	10.00		83	28.3	59	14.9	33	3.3	20	20	280	28	29.68		29.62	AA		29.62	
03	2253	12	CLR	10.00		81	27.2	56	13.1	30	11.1	16	13	320		29.69		29.63	AA		29.63	
03	2353	12	CLR	10.00		81	27.2	56	13.4	32	0.0	17	17	270		29.69		29.63	AA		29.63	

Dynamically generated Tue Sep 06 12:08:28 EDT 2016 via <http://www.ndbc.noaa.gov/qcld/QCLCD>

FIGURE B-25 EL CENTRO NAF (KNJK) QCLCD – SEPTEMBER 3, 2016

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA (may be updated)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

HOURLY OBSERVATIONS TABLE NAF (23199) EL CENTRO, CA (09/2016)

Elevation: -42 ft. below sea level
Latitude: 32.816
Longitude: -115.683
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (n. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (n. hg)	Report Type	Precip. Total (in)	Alti-meter (n. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
03	0056	5	CLR	10.00	HZ	83	28.3	56	13.4	29	-1.7	14	6	200		29.73		29.73	AA		29.69	
03	0156	5	CLR	10.00		83	28.3	59	14.9	38	3.3	20	7	200		29.73		29.73	AA		29.69	
03	0256	5	CLR	6.00		79	26.1	59	14.9	42	5.6	27	6	160		29.73		29.74	AA		29.69	
03	0356	5	CLR	10.00		79	26.1	67	19.5	60	15.6	52	3	160		29.73		29.74	AA		29.69	
03	0456	5	CLR	10.00		77	25.0	66	19.1	60	15.6	56	0	000		29.74		29.75	AA		29.70	
03	0556	5	CLR	10.00		79	26.1	M	M	M	M	3	160		29.76		29.76	AA		29.72		
03	0656	5	FEW150	10.00		86	30.0	65	18.3	51	10.6	30	3	280		29.77		29.78	AA		29.73	
03	0756	5	FEW150	10.00		89	31.7	67	19.1	52	11.1	28	5	230		29.79		29.79	AA		29.75	
03	0856	5	FEW150	10.00		92	33.3	65	18.5	47	8.3	21	0	000		29.78		29.79	AA		29.74	
03	0956	5	FEW150	10.00		96	35.6	64	17.7	39	3.9	14	0	000		29.77		29.77	AA		29.73	
03	1056	5	FEW150	10.00		99	37.2	63	17.2	32	0.0	9	6	170		29.75		29.76	AA		29.71	
03	1156	5	CLR	10.00		99	37.2	65	18.1	38	3.3	12	3	190		29.73		29.73	AA		29.69	
03	1256	5	CLR	10.00		102	38.9	66	18.8	38	3.3	11	5	160		29.71		29.71	AA		29.67	
03	1356	5	CLR	10.00		102	38.9	67	19.4	43	6.1	13	6	VR		29.68		29.69	AA		29.64	
03	1456	5	CLR	10.00		103	39.4	65	18.2	34	1.1	9	7	VR		29.66		29.66	AA		29.62	
03	1556	5	CLR	6.00	-RA	104	40.0	63	17.2	24	-4.4	6	25	260		29.65		29.65	AA		29.61	
03	1656	5	CLR	6.00	-RA	100	37.8	62	16.8	28	-2.2	8	26	260		29.63		29.64	AA		29.59	
03	1738	5	CLR	2.50	-RA	95	35.0	62	16.8	35	1.7	12	28	260	37	29.63		M	SP		29.59	
03	1756	5	FEW006	1.75	-RA	93	33.9	63	16.9	38	3.3	15	31	260	39	29.63		29.64	AA		29.59	
03	1828	5	SCT006	2.50	-RA	90	32.2	63	16.9	41	5.0	18	29	270	39	29.63		M	SP		29.59	
03	1839	5	BKN006	2.50	-RA	89	31.7	62	16.7	41	5.0	19	26	280	33	29.64		M	SP		29.60	
03	1856	5	BKN008	2.50	-RA	87	30.6	61	16.1	40	4.4	19	29	280	37	29.64		29.65	AA		29.60	
03	1916	5	BKN006	1.25	-RA	87	30.6	60	15.6	37	2.8	17	33	270	43	29.65		M	SP		29.61	
03	1929	5	SCT006	2.50	-RA	86	30.0	59	15.0	35	1.7	16	36	270	43	29.65		M	SP		29.61	
03	1938	5	SCT005	4.00	-RA	85	29.4	58	14.5	34	1.1	16	29	260	40	29.66		M	SP		29.62	
03	1956	5	CLR	3.00	-RA	86	30.0	57	13.9	28	-2.2	12	31	36	290		29.68		29.68	AA		29.64
03	2056	5	CLR	10.00	-RA	84	28.9	56	13.5	28	-2.2	13	28	270		29.68		29.68	AA		29.64	
03	2156	5	CLR	10.00		82	27.8	57	13.8	33	0.6	17	22	280		29.69		29.70	AA		29.65	
03	2256	5	CLR	10.00		81	27.2	54	12.4	25	-3.9	13	21	280		29.69		29.70	AA		29.65	